

**REMARKS**

Claims 1-15 are pending in this application. By the Office Action, claims 1-7 and 10-12 are rejected under 35 U.S.C. §102, and claims 8-9 and 13-15 are rejected under 35 U.S.C. §103.

**Rejection under 35 U.S.C. § 102(b)**

The Office Action rejects claims 1-7 and 10-12 under 35 U.S.C. §102(b) as being anticipated by Kamei (U.S. Patent No. 4,702,745, hereinafter "Kamei"). Applicants respectfully traverse the rejection, asserting that Kamei fails to disclose all of the elements of the claimed invention.

Independent claim 1 recites "a method for dewatering water-containing coal, comprising heating the water-containing coal at a temperature of 100°C to 350°C under a pressure not less than a saturated steam pressure at the temperature for the heating, while applying a shearing force of 0.01 MPa to 20 MPa to the water-containing coal, in a sealed vessel." Thus, one of the elements of the claimed invention includes applying a *shearing force* of 0.01 MPa to 20 MPa to water-containing coal *during* the dewatering of the water-containing coal at the claimed range of temperatures and pressures.

In contrast to the claimed invention, Kamei teaches applying *compression force* (rather than *shearing force*), and only *after* dewatering brown coal. In Figure 3, Kamei illustrates a screw extruder-type compressing-depressing unit (*see* Kamei, Figure 3 and col. 6, lines 7-8). Kamei teaches that "hot dewatered brown coal" is introduced through chute 10 into compression chamber 11 (*see* Kamei, col. 6, lines 8-12). Unlike the claimed invention, the extruder in Kamei receives brown coal that has already been dewatered in heating chamber 2 (*see* Figure 1 of Kamei). The compressing-depressurizing unit (shown in Figure 3 of Kamei and shown as compressing-depressurizing unit 4 in Figure 1 of Kamei) then compresses the dewatered coal and pushes the dewatered coal out (*see* Kamei, col. 6, lines

12-21). Thus, Figure 3 of Kamei illustrates that Kamei fails to disclose, and in fact, *teaches away* from, the claimed feature of applying *shearing force* to water-containing coal *during* the dewatering of the water-containing coal (as recited in claim 1).

Furthermore, Applicants submit that the method disclosed in Kamei cannot achieve the results obtained by the claimed invention. As discussed in Comparative Example 1 on page 13 of the present specification, if a shearing force of as low as 0.001 MPa is applied to the water-containing coal, the results were quite unsatisfactory. Comparative Example 1 of the present specification demonstrates the following:

The treatment was carried out similarly to Example 1 except that heating was conducted at 250°C under the pressure of 4 MPa for one hour with the shearing force set at 0.001 MPa. Dewatering the brown coal apparently occurred, but when the mixture was left for a while, most of the water, which had once removed from the brown coal, entered the brown coal again, and the slurry did not have the suitable properties.

Based on these results, it may be deduced that if *no* shearing force is applied during the dewatering of the water-containing coal (as in Kamei), the results would be inferior to results shown in Comparative Example 1.

In addition, Applicants note that the method disclosed in Kamei cannot remove water bound to coal by van der Waals forces because Kamei fails to teach heating water-containing coal while applying shearing force. In contrast, the claimed invention (as recited in independent claim 1) facilitates the removal of water bound to coal by van der Waals forces by simultaneously heating the water-containing coal and applying the claimed range of shearing force (as discussed in paragraph [007] on pages 2 and 3 of the present specification).

For at least these reasons, Kamei fails to disclose or even suggest applying a shearing force of 0.01 MPa to 20 MPa to water-containing coal *during* the dewatering of the water-containing coal at the claimed range of temperatures and pressures, as recited in independent claim 1 (and the dependent claims). Furthermore, Kamei fails to disclose or suggest heating

water-containing coal while applying the claimed range of shearing force, as recited in independent claim 1 (and the dependent claims). Lastly, Kamei fails to appreciate the advantages stemming from the aforementioned elements of the claimed invention (as illustrated in Comparative Example 1 on page 13 of the present specification).

Accordingly, Kamei fails to disclose each and every element of claims 1-7 and 10-12, as required for anticipation under 35 U.S.C. §102(b). Kamei thus does not anticipate the claimed invention. Reconsideration and withdrawal of the rejections are respectfully requested.

**Rejection under 35 U.S.C. § 103(a)**

The Office Action rejects claims 8 and 9 under 35 U.S.C. §103(a) as being unpatentable over Kamei in view of Verschuur (U.S. Patent No. 4,216,082, hereinafter "Verschuur"). The Office Action also rejects claims 13-15 under 35 U.S.C. §103(a) as being unpatentable over Kamei in view of Verschuur and Gregory (U.S. Patent No. 2,824,790, hereinafter "Gregory"). Applicants respectfully traverse the rejections.

For the reasons set forth above, Applicants submit that Kamei fails to disclose, and likewise fails to teach or suggest, all of the elements of independent claim 1, from which claims 8, 9, and 13-15 ultimately depend. Because the Office Action merely relies upon Verschuur and Gregory to teach adjusting water content in the final mixture and adding bitumen to the dewatered coal, Applicants submit that both Verschuur and Gregory fail to cure the aforementioned deficiencies of Kamei. Therefore, Applicants submit that Kamei, Verschuur, and Gregory (either alone or in any proper combination) fail to disclose or to have rendered obvious all of the elements of the claimed invention, as recited in claims 8, 9, and 13-15.

The cited references thus would not have rendered obvious the claimed invention. Reconsideration and withdrawal of the rejections are respectfully requested.

**Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-15 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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